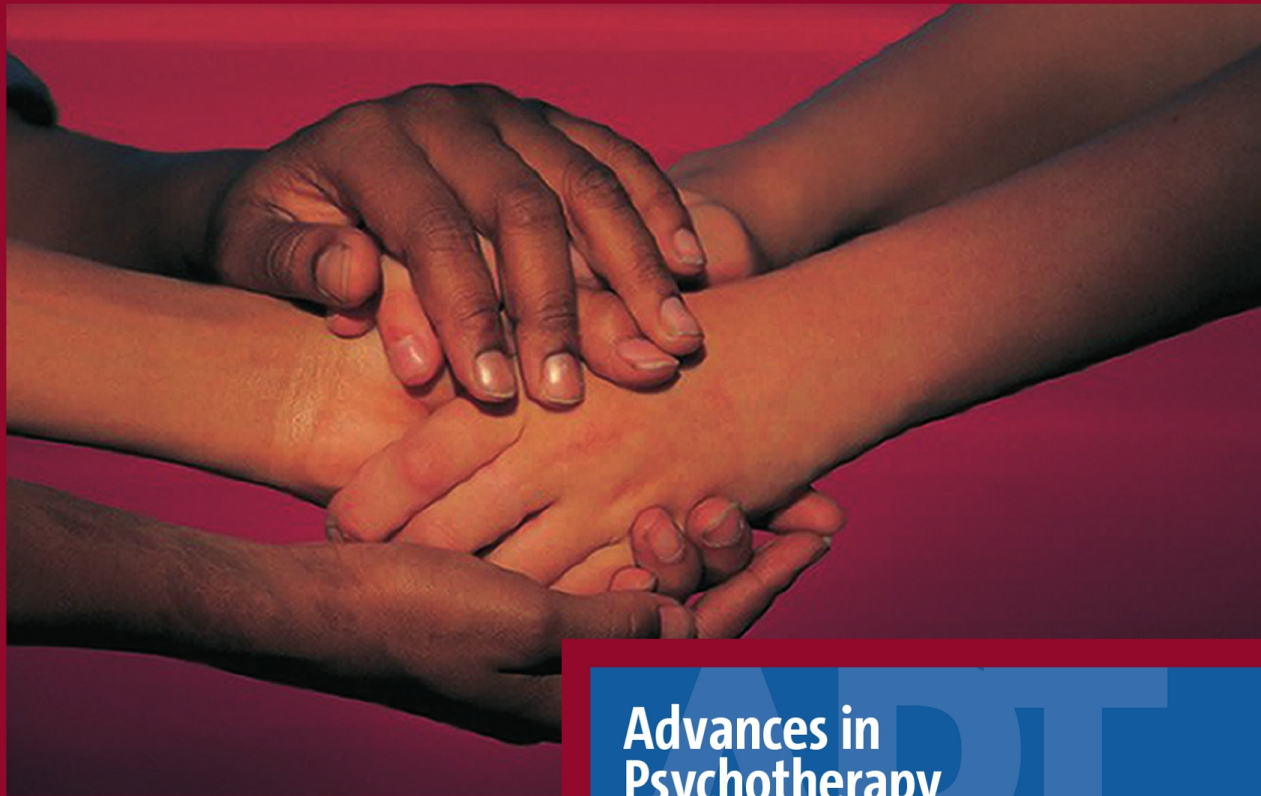


Ronald T. Brown · Brian P. Daly ·
Annette U. Rickel

Chronic Illness in Children and Adolescents



Advances in
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Chronic Illness in Children and Adolescents

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Advances in Psychotherapy – Evidence-Based Practice

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Chronic Illness in Children and Adolescents

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Table of Contents

Acknowledgments	v
1 Description	1
1.1 Terminology	1
1.2 Definition	3
1.3 Epidemiology	4
1.3.1 Incidence and Prevalence	5
1.4 Course and Prognosis	6
1.4.1 Asthma	7
1.4.2 Cancer	8
1.4.3 Cystic Fibrosis	9
1.4.4 Diabetes Mellitus	9
1.4.5 Sickle Cell Disease	10
1.5 Differential Diagnosis	11
1.6 Comorbidities	12
1.6.1 Asthma	14
1.6.2 Cancer	14
1.6.3 Cystic Fibrosis	14
1.6.4 Diabetes Mellitus	15
1.6.5 Sickle Cell Disease	15
1.7 Diagnostic Procedures and Documentation	15
2 Theories and Models of the Disorder	17
2.1 Risk Factors	19
2.1.1 Disease and Disability Parameters	20
2.1.2 Genetic Disorders	20
2.1.3 Intrauterine Growth Retardation, Prematurity, and Low Birth Weight	20
2.1.4 Teratogens	20
2.1.5 Disease Severity	21
2.1.6 Functional Independence	21
2.1.7 Psychosocial Stressors	21
2.2 Resistance Factors	23
2.2.1 Intrapersonal Factors	23
2.3 Social-Ecological Factors	23
2.3.1 Family Functioning	23
2.3.2 Financial Resources	24
2.3.3 Stress Processing	24
2.4 Applying the Models to Sickle Cell Disease	25
3 Diagnosis and Treatment Indications	28
3.1 Caregiver and Child Interviews	28
3.2 Behavior	29
3.3 Cognition	30

3.4	Affect	30
3.5	Adherence	31
3.6	Stress and Coping	31
3.7	Quality of Life	32
3.8	Family Variables	32
3.9	Summary	33
4	Treatment	36
4.1	Methods of Treatment	36
4.1.1	Behavior Therapy	36
4.1.2	Cognitive-Behavior Therapy	38
4.1.3	Behavioral and Cognitive-Behavioral Interventions – Empirical Support and Clinical Trials	40
4.1.4	Psychological Adjustment	40
4.1.5	Psychosocial Factors, Coping, and Pain Management	43
4.1.6	Adherence	47
4.1.7	Family Systems Interventions	50
4.1.8	Parent Training	54
4.1.9	Group Therapy	55
4.1.10	Peer Group Interventions	57
4.1.11	Peer Support Groups	58
4.1.12	Electronic Peer Support Groups	59
4.1.13	Self-Regulatory Skill Training, Self-Management, and Psychoeducational Strategies	60
4.2	Mechanisms of Action	62
4.3	Efficacy and Prognosis	62
4.4	Variations and Combinations of Methods	63
4.5	Problems in Carrying Out the Treatment	63
4.5.1	Individual Barriers	64
4.5.2	Family Barriers	64
4.5.3	Provider Barriers	64
4.5.4	System and Setting-Based Barriers	64
4.6	Multicultural Issues	65
4.7	Summary	66
5	Case Vignette	67
6	Further Reading	69
7	References	70
8	Appendix: Tools and Resources	85

1

Description

Management of chronic illness in children and adolescents often is a multifaceted challenge that requires the attention and expertise of individuals from a variety of disciplines that include psychology, psychiatry, social work, and medicine. The aim of this book is to provide readers with a practical overview of the definitions, characteristics, theories and models, diagnostic and treatment indications, and relevant aspects and methods of evidence-based psychosocial treatments for chronic illness in children and adolescents. Although treatments and research for chronic conditions are reviewed in general, particular attention is directed at asthma, cancer, cystic fibrosis, diabetes mellitus, and sickle cell disease due to the high incidence of these chronic diseases among children and adolescents. Case vignettes and suggestions for further reading are provided for the interested reader.

1.1 Terminology

The *International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM)* names and codes for selected general medical conditions are found in Appendix G of the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision (DSM-IV-TR, American Psychiatric Association, 2000)*. The most recent ICD codes, ICD-10, were updated following publication of the DSM-IV-TR. Thus, because the DSM-IV-TR is the most recent version of the DSM, we describe conditions coded according to ICD-9-CM criteria. As part of the multiaxial assessment, these conditions should be listed on Axis III, General Medical Conditions. Below are a sample of the codes and names for common childhood and adolescent chronic illnesses listed in Appendix G of the DSM-IV-TR. It should be noted that this list represents only a sample of childhood chronic illnesses and is by no means exhaustive. Page limitations preclude a description of all chronic diseases.

Diseases of the Nervous System

- 345.10 Epilepsy, grand mal
- 345.40 Epilepsy, partial, with impairment of consciousness (temporal lobe)
- 345.50 Epilepsy, partial, without impairment of consciousness (Jacksonian)
- 345.00 Epilepsy, petit mal (absences)

Diseases of the Circulatory System

- 416.9 Chronic pulmonary heart disease

Diseases of the Respiratory System

- 493.20 Asthma, chronic obstructive
- 493.90 Asthma, unspecified
- 277.00 Cystic fibrosis

Neoplasms

- 208.10 Leukemia, chronic

Endocrine Diseases

- 250.00 Diabetes mellitus, type II/noninsulin-dependent
- 250.01 Diabetes mellitus, type I/insulin-dependent

Table 1
Pediatric Disorders from Major Pediatric Subspecialty Populations with Examples of Relevant Psychological Aspects

Subspecialty	Condition	Representative psychological aspects
Cardiology	Congenital heart defects	Impaired cognitive function secondary to hypoxia, parental guilt about responsibility for anomaly
	Acquired heart defects	Restriction of activity secondary to blood thinner used in valve replacement
	Hypertension	Cognitive/mood effects of antihypertensive medication
Endocrinology	Diabetes mellitus	Nonadherence with complex self-care regimen
Gastroenterology	Nonorganic recurrent abdominal pain	Reinforcement of child "sick" behavior, family dysfunction
	Ileitis (Chron's disease)	Impaired self-esteem
Hematology	Sickle cell disease	Recurrent pain, cognitive changes
	Hemophilia	Chronic arthritic pain
Infectious disease	AIDS	Cognitive deterioration, depression
Neonatology	Brochopulmonary dysplasia	Feeding disorders, developmental delays
Nephrology	Renal failure	Treatment nonadherence, cognitive symptoms
	Cushing syndrome	Muscle weakness, body composition changes
Neurology	Seizures	Medication-induced changes in cognitive functioning
Oncology	Leukemia	Coping with adverse medical diagnostic and treatment procedures
	Solid tumors	Pain, treatment-related cognitive changes, death and dying issues

Nutritional Diseases

- 278.00 Obesity

Metabolic Diseases

- 275.1 Wilson's disease

Musculoskeletal System and Connective Tissue Diseases

- 714.00 Arthritis, rheumatoid
- 710.00 Systemic lupus erythematosus

Congenital Malformations, Deformations, and Chromosomal Abnormalities

- 741.90 Spina bifida

Infectious Diseases

- 042 HIV infection (symptomatic)

1.2 Definition

Chronic illness and physical disability (chronic health problems) generally refer to a disease state that has symptoms with a protracted course and involves

Chronic illness may affect a person's health status or psychological functioning

Table 2
Chronic Illness Terminology and Definitions

Term	Definition
Acute illness	A disease with an abrupt onset and usually a short course.
Adherence	The extent to which an individual's behavior agrees with advice given by health care providers.
Adaptation to illness	The psychological functioning and personal adjustment of children and adolescents who suffer from a chronic illness.
Chronic health problems	A health problem that lasts over three months, affects the child or adolescents normal activities, and requires lots of hospitalizations and/or home health care and/or extensive medical care.
Chronic illness	A disease state that has symptoms with a protracted course and involvement of one or more organ systems (e.g., brain, heart, lung, blood) and may impair health status or psychological functioning, and lasts three months or longer.
Coping	Changing thoughts and behaviors to manage distress and the problem underlying the distress in the context of a specific stressful encounter or situation.
Physical disability	Physical impairment that seriously limits one or more functional capacities.
Special health care needs	Children and adolescent who have or are at increased risk for a chronic physical, developmental, behavioral, or emotional condition and who also require health and related services of a type beyond that required by children generally.
Pain management	The process of attempting to alleviate or reduce pain.

one or more organ systems (e.g., brain, heart, lung, blood) and may impair health status or psychological functioning (Brown, 2006). Conditions are defined as chronic when they persist for more than three months within one year, affect the child's typical functioning and normal activities, and require ongoing care from one or more health care providers (Wallander, Thompson, & Alriksson-Smith, 2003). Some examples of chronic conditions include (but are not limited to): severe asthma, birth defects, type I and type II diabetes mellitus, congenital heart disease, depression, developmental disabilities, juvenile rheumatoid arthritis, cerebral palsy, muscular dystrophy, sickle cell disease, hemophilia, cystic fibrosis, cancer, head injuries, epilepsy, spina bifida, and HIV/AIDS.

Acute illness episodes last less than three months

An acute illness differs from a chronic illness in that it comes about suddenly and often has an identifiable cause. Generally, acute illnesses may be readily treated and the patient often experiences a return to normal health. These acute episodes tend to last less than three months. Some examples of acute illness include appendicitis, ear infection, and pneumonia. In contrast, a chronic illness often begins gradually, may have an uncertain etiology, and has multiple risk factors. Although chronic illnesses may be managed medically, they are rarely able to be completely cured and often persist for extended periods of time and even sometimes for life (Wallander et al., 2003). For these reasons, some children and adolescents with a chronic illness and their families may often experience high levels of stress and consequently require substantial amounts of time, energy, and personal resources in order to cope with the stressors and demands associated with their illness (Stein & Jessop, 1989).

1.3 Epidemiology

There is still debate about whether to use a categorical or noncategorical approach when classifying a chronic illness

Assessing the epidemiology of chronic illness in children and adolescents is difficult because of a multitude of factors, with the most significant being the lack of a consensus definition used to determine the specific illnesses to be included under the category of chronic illness (Seiffge-Krenke, 2001). Included within the domain of chronic illness are children with chronic physical illnesses, various forms of disability, and special health care needs. Attempts to reach a consensus definition have been further complicated by the fact that each chronic physical condition has a distinct biological process and pathophysiology, and the fact that specific treatments are generally designed for specific conditions (Brown, 2006). In addition, there is considerable debate in the pediatric psychology literature about whether to apply a categorical (disease specific) or noncategorical approach when classifying a chronic illness.

The categorical approach posits that each chronic illness or condition is associated with a unique set of psychosocial challenges (Reiter-Purtill & Noll, 2003). The strengths of this approach include the specificity of findings and ease of communication. A clear limitation of the categorical approach is that one third to one fifth of children with chronic illnesses have more than one chronic condition. The noncategorical approach recognizes that irrespective of illness type or condition, young people living with a chronic illness experience common stressors and face many similar life concerns that may result in psy-

chological and social difficulties (Rolland, 1987; Stein & Jessop, 1982). The noncategorical approach allows for the study of specific topics (e.g., stress and coping) across illness groups, and it also allows for greater generalization with regard to all chronic conditions.

Although the majority of early research on pediatric chronic illness used categorical models, more recent studies have favored the noncategorical approach in understanding the psychosocial functioning of children and adolescents (e.g., Garstein, Short, Vannatta, & Noll, 1999; Wallander & Varni, 1998). Studies that use the noncategorical approach have demonstrated that there are few specific differences between disease groups (Meijer, Sinnema, Bijstra, Mellenbergh, & Wolters, 2000a; Nassau & Drotar, 1995), with some differences in psychological functioning being associated with functional impairments, restriction of activities (Meijer, Sinnema, Bijstra, Mellenbergh, & Wolters, 2000b), or central nervous system (CNS) dysfunction (Noll, Ris, Davies, Bukowski, & Koontz, 1992).

There also is a lack of quality data specifically focusing on chronic illness in children and adolescents, and there continues to be significant variance in methodology used to investigate the psychological functioning of various illnesses across these pediatric age ranges (Suris, 1995; Westbrook & Stein, 1994). Differences in methodology include the method of data collection (self-report vs. interview), and selection of the study participants (clinical vs. population-based samples), that may result in discrepancies in epidemiological data with regard to the psychiatric functioning of children and adolescents who suffer from chronic disease. Finally, the majority of childhood chronic conditions are rare, with the exception of asthma, psychiatric disturbances (e.g., attention-deficit/hyperactivity disorder and depression), and developmental delay. As a result of the scant literature in these areas, there is often less familiarity and experience with these conditions among mental health professionals (Perrin & MacLean, 1988).

1.3.1 Incidence and Prevalence

Narrowly defined definitions of chronic illness result in an approximate prevalence rate of 7% among adolescents (Newacheck & Stoddard, 1994). In contrast, broader definitions of chronic illness that include conditions such as mild asthma or correctable vision may raise the prevalence rate for adolescents as high as 15% (Suris, Michaud, & Viner, 2004). Recent estimates that include school-age children and adolescents suggest that between 20% and 30% of children in the U.S. (approximately 12–18 million) have a significant ongoing health care need related to a chronic health condition (Newacheck et al., 1998). However, prevalence estimates may further be defined by the functional impairment associated with the illness or the influence of the illness on the adolescent's daily functioning. Approximately two thirds of children experience mild conditions (not limited in activities); 29% experience moderate severity (limiting of some activity); and 5% experience severe conditions (significant bother and limitation of activity) (Newacheck & Taylor, 1992).

Recent evidence suggests that the prevalence rate of children and adolescents with chronic disability may be lower in the United States when compared

Table 3
Prevalence Rates of Chronic Illnesses in Childhood and Adolescence

Illness	Prevalence Rate (%)	
	Gortmaker et al. (1990) (0–15 Years)	Newacheck & Taylor (1992) (10–17 Years)
Asthma	2.93	4.68
Cancers and tumors	0.06	—
Cystic fibrosis	0.03	—
Diabetes mellitus	0.10	0.15
Sickle cell anemia	0.09	—

The lowest rate of chronic disability is in the United States when compared to other industrialized countries

The general prevalence of chronic illness among children and adolescents is rising

There are higher rates of chronic illness among individuals of lower socioeconomic status

to other industrialized countries. Merrick and Carmeli (2003) reviewed recent studies that examined the prevalence rates of chronic disability in Scandinavia, Israel, and the United States. The lowest rate of disability (5.8%) was found in the United States, and the highest prevalence in Finland (9.8%).

More importantly, the general prevalence of chronic illness among children and adolescents is rising, such that the percentage of children with severe long-term disease has more than doubled over the past two decades (Brown, 2006). Earlier detection of chronic illness, advances in biomedical science and medical care, and significant improvements in disease management that reduce mortality may partly account for the rising prevalence rates (Stein & Silver, 1999). Therefore, many children and adolescents who previously would have succumbed to their illness in previous years are now living well into their adult years.

Global epidemiological surveys have indicated higher rates of chronic illness among males, rural residents, individuals of lower socioeconomic status (SES), individuals residing in impoverished areas within countries, and among adolescents living in less educated families (Newacheck, 1994; Suris, 1995; van Dyck, Kogan, McPherson, Weissman, & Newacheck, 2004; Weiland, Pless, & Roghmann, 1992). In addition, variability has been noted with respect to specific conditions as they pertain to various social class and ethnic groups. For example, asthma is most prevalent in children from low-income and minority groups (Miller, 2000). Moreover, African-American children are roughly three times more likely to be hospitalized for asthma than are their Caucasian peers – 55.9 per 10,000 African-American children versus 16.2 per 10,000 Caucasian children ranging in age from birth to 17 years in 2001 (National Healthcare Quality/Disparities Reports [NHQDR], 2004) Additional examples include cystic fibrosis, which primarily affects Caucasians, and sickle-cell disease, which primarily affects African-Americans (Thompson & Gustafson, 1996).

1.4 Course and Prognosis

With the improved prognosis of many pediatric diseases, it is estimated that up to 98% of children diagnosed with a chronic illness now live to be at least 20

years old (van Dyck et al., 2004), depending on the condition. Thus, some diseases that previously significantly limited life expectancy are now considered chronic illnesses, whereas some illnesses and diseases are now cured.

For those children whose condition remains constant, most will not be able to lead normal lives without specialized care or management (Stein & Jessop, 1989). Children with chronic illnesses are also more likely than healthy children to have frequent physician and hospital visits (Newacheck et al., 1998). Additionally, among noninjury causes, chronic illness now accounts for the majority of children's hospital days and deaths (Wise, 2004). Those children whose illness is sufficient to limit most normative activities account for nearly one quarter of all school absences, one fifth of physician visits, and one third of days hospitalized (Newacheck & Taylor, 1992). It is estimated that approximately one half of young people with significant chronic illness are severely compromised in educational activities (Sexson & Madan-Swain, 1993). Despite these concerns, proper care and management may still help these children achieve near-typical functioning in their daily lives.

Many factors may affect the course of a chronic illness, including heredity, lifestyle (stress), behavioral factors (e.g., diet, exercise, treatment nonadherence, substance abuse, neurological impairments), and even environmental factors. It is noteworthy that chronic illnesses beginning in childhood present a special challenge to the quality of life (QOL) and life expectancy of both children and adolescents. Thus, when thinking about chronic illness, it is important to be familiar with the psychosocial implications of chronic illness. The onset of a chronic illness may be either acute or gradual with the course being progressive, constant, or relapsing. Outcomes for chronic illness often include shortened lifespan or death. Given that various chronic illnesses have different onsets, courses, and outcomes, we present a summary of the incidence, onsets, course, and prognosis of some of the more frequent chronic child and adolescent conditions.

Factors that affect chronic illness include heredity, lifestyle, behavioral factors, and environmental factors

1.4.1 Asthma

Asthma is characterized as a chronic inflammatory disorder of the airways that involves intermittent and variable periods of airway obstruction (National Institutes of Health [NIH], 1997). Bronchial asthma affects over six million children and adolescents under the age of 18, and it is the leading cause of chronic illness among children and adolescents in the United States (Centers for Disease Control and Prevention [CDC], 1996). Findings from the 2001 National Health Interview Survey (NHIS; CDC, 2003) indicate that 13% of children under age 18 have been diagnosed with asthma, and 6% have had an asthma attack in the past twelve months.

Asthma is the leading cause of chronic illness among children and adolescents in the United States

Asthma causes more school absences each year (about 10 million) than any other chronic disease and is the third most common reason children under the age of 15 years are hospitalized (Taylor & Newacheck, 1992). The estimated annual cost of treating asthma in children in the United States during 1999 was \$3.2 billion, resulting in a significant economic burden to patients, their families, health care providers, and society. What is most troubling about this disease is that studies have demonstrated an increasing prevalence of asthma

morbidity and mortality, despite the availability of innovative and effective therapies to manage this disease (Weiss, 1996). Further, pediatric asthma disproportionately affects ethnic minority youth, urban communities, and low-income populations (Crain, Kercsmar, Weiss, Mitchell, & Lynn, 1998; Evans, 1992). For example, prevalence rates in diagnosed asthma are higher for African-Americans (15.7%) than for Caucasians (12.2%), but lowest for Hispanics (11.2%). Finally, rates are higher for poor children (15.8%) than nonpoor children (12%) (Akinbami, LaFleur, & Schoendorf, 2002).

The course of asthma varies considerably across patients (Young, 1994). The majority of children experience episodic illness, with extended symptom-free periods (intermittent asthma). In contrast, some children experience more continuous episodes and, in the absence of continuous therapy, do not have extended symptom-free periods (chronic asthma) (Thompson & Gustafson, 1996). Children who suffer from seasonal allergies may experience virtually daily symptoms during an inhalant allergy season (seasonal asthma). Finally, severe asthma leading to death has been noted in a very small percentage of school children, with hypoxia being the primary cause of death (Evans et al., 1987). Frequently, this outcome has been associated with poor asthma management.

Studies that have examined the natural history of asthma from childhood to adulthood have found that it may be self-limited and remit over time, or it may persist and worsen in adulthood (Limb et al., 2005), indicating significant individual variability over the course of time. In general, factors that predict the persistence of asthma into adulthood include an early age at onset, severity of childhood asthma, and the degree of atopy (a response to common environmental allergens) (Zeiger, Dawson, & Weiss, 1999). Overall, for children with asthma, one third will experience spontaneous symptom remission by puberty (Seiffge-Krenke, 2001), with one half or more outgrowing the condition by adulthood. With proper treatment and a team approach to managing asthma, including family participation, most affected children can be expected to live a normal life. However, the prognosis is more guarded for children and adolescents who do not adhere to their prescribed treatment regimen.

1.4.2 Cancer

Cancer is the leading cause of death by disease for children under the age of 15 years

Every year, approximately 12,500 children and adolescents are diagnosed with cancer in the United States. In contrast to adults, cancer in children and adolescents is still considered rare, as only 1% of all cancers occur in the pediatric age group (Seiffge-Krenke, 2001). Nonetheless, cancer is the leading cause of death by disease for children under the age of 15 years (Mulhern & Butler, 2004). The most prevalent childhood cancers are acute lymphoblastic leukemia (ALL) and malignant brain tumors.

The course of cancer in children depends on a multitude of factors, including type of cancer, age at diagnosis, and initial symptomatology. On the basis of these factors, among others, children are classified into low-, medium-, or high-risk categories, which determine the intensity of their treatments (Cecalupo, 1994). Fortunately, due to the recent significant advances in various chemotherapies, there has been marked improvement in the survival rate among children and adolescent with cancer. For example, recent data indicate

a cure rate exceeding 80% for children diagnosed with ALL (Mulhern & Butler, 2004).

1.4.3 Cystic Fibrosis

Cystic fibrosis (CF) is a genetically inherited disease that affects sodium channels in the body and causes respiratory and digestive problems. CF affects the mucus and sweat glands of the body and is caused by a defective gene (Lewiston, 1985). Thick mucus is formed in the breathing passages of the lungs and this predisposes the person to chronic lung infections (Levitan, 1989). Recent data from the 2003 Cystic Fibrosis Foundation Registry indicate that approximately 1 in 3,500 children in the United States each year is born with CF. Overall, approximately 30,000 children and adults in the United States, primarily Caucasian, are affected by CF (Cystic Fibrosis Foundation, 2003).

More than 80% of patients are diagnosed with CF by age three (Cystic Fibrosis Foundation, 2003). The course varies greatly from patient to patient, and is largely determined by the degree of pulmonary involvement. Among children, CF represents the most common lethal genetic disorder among Caucasians in the United States (Wagener, Sontag, Sagel, & Accurso, 2004). With recent advances in detection and management, the median age of survival for a person with CF is in the early to mid 30s (Cystic Fibrosis Foundation, 2003). This represents a dramatic increase in survival over the last three decades. Deterioration is inevitable in patients with CF, leading to debilitation and eventual death, usually from a combination of lung complications and cor pulmonale (an alteration in the structure and function of the right ventricle caused by a primary disorder of the respiratory system).

Cystic fibrosis is a genetically inherited disease

1.4.4 Diabetes Mellitus

Diabetes mellitus (DM) is a chronic metabolic disorder caused by an absolute or relative deficiency of insulin. Approximately 1.6 million children have diabetes (Centers for Disease Control and Prevention, 2000), making it the most common metabolic disease of childhood and adolescence. Type I DM, formerly referred to as insulin-dependent diabetes mellitus, juvenile diabetes, or childhood diabetes, occurs in approximately 1 in 500–600 children (Wysocki, Greco, & Buckloh, 2003) and usually begins during childhood or adolescence. Type I DM results from the absence, destruction, or loss of beta cells of the islets of Langerhans in the pancreas that causes an absolute deficiency of insulin. Type II DM, formerly known as adult-onset diabetes because it was uncommon in children, has been reported among U.S. children and adolescents with increasing frequency, and presently accounts for 10% to 20% of new cases of diabetes in youth. Type II DM begins when the body develops a resistance to insulin and no longer uses insulin properly. As the child's or adolescent's need for insulin rises, the pancreas gradually loses its ability to produce sufficient amounts of insulin to regulate blood sugar.

Results from the National Health Interview Study revealed a prevalence of DM of 150 cases in 100,000 children and adolescents who were between the

Type I diabetes mellitus usually begins during childhood or adolescence

ages of 10 and 17 years (Newacheck & Taylor, 1992). A lower prevalence rate of 60 per 100,000 was reported for younger children in this study. Caucasians have the highest reported incidence of type I DM. In contrast, the incidence of type II DM is disproportionately higher among African-American, Native-American, and Hispanic populations (Wysocki et al., 2003).

Type I DM has little immediate morbidity, with the exception of severe diabetes ketoacidosis or hypoglycemia. Diabetic ketoacidosis (DKA) is a life-threatening condition that develops when cells in the body are unable to get the sugar (glucose) they need for energy. It can occur in children and adults who have little or no insulin in their bodies (mostly people with type I DM) when their blood sugar levels are high. Ketoacidosis can be caused by not taking enough insulin, having a severe infection or other illness, becoming severely dehydrated, or some combination of these factors. Hypoglycemia, also called low blood sugar, occurs when the blood glucose (blood sugar) level drops too low to provide enough energy for the body's activities. Hypoglycemia may be caused by certain medications, alcohol, certain cancers, critical illnesses such as kidney, liver, or heart failure, hormonal deficiencies, and disorders that result in the body producing too much insulin. Both forms of diabetes may be controlled by diet, exercise, oral medications, and insulin injections. Both type I and type II DM raise a person's risk for heart disease, stroke, and damage to the kidneys and eyes. In addition, uncontrolled diabetes is the leading cause of blindness, kidney disease, and amputations of arms and legs.

1.4.5 Sickle Cell Disease

Children with sickle cell disease often suffer from pain crises

Sickle cell disease (SCD) represents a spectrum of inherited disorders of red blood cells that is characterized by pain episodes, anemia (shortage of red blood cells), serious infections, and damage to vital organs (Lemanek, Ranalli, Green, Biega, & Lupia, 2003). These symptoms are caused by abnormal hemoglobin. In the United States, SCD affects approximately 72,000 people, most of whose ancestors come from Africa, although it is also present in people of Mediterranean, Indian, and Middle Eastern heritage (Charache, Lubin, & Reid, 1989). SCD is much more common in certain ethnic groups, occurring in approximately 1 in every 500 African American births and in 1 in every 1,000 to 1,400 Hispanic American births (National Heart, Lung, and Blood Institute [NHLBI], 1996).

Sickle cell disease is characteristically varied in its course between and within affected individuals (Ballas, 1991), but may include exacerbations that can become life threatening at any time. The frequency, severity, and nature of specific complications in any given individual are all important factors in predicting prognosis. For example, although infection is the leading cause of death in affected children aged 1–3 years, strokes and trauma are the leading causes of death in patients aged 10–20 years (Davis, Schoendorf, Gergen, & Moore, 1997). Recent estimates document that 80% of children with sickle cell disease will live into the third decade of life (Quinn, Rogers, & Buchanan, 2004). Early detection and comprehensive medical care have greatly improved the quality of life for people with sickle cell disease such that many are in fairly good health most of the time.

1.5 Differential Diagnosis

Recent research has demonstrated that there are several commonalities in psychosocial functioning across chronic conditions and disabilities (Brown, 2006). For example, the literature on adjustment and adaptation among specific disease categories has revealed few differences (Wallander et al., 2003). In addition, families of children with chronic disease and illness face remarkably similar problems. Thus, many experts have considered chronic illness and associated psychiatric symptoms as a general issue rather than a disease specific issue. For this reason, the psychosocial study of children and adolescents with a chronic illness has moved decidedly toward a noncategorical approach. Noncategorical approaches focus on the person or child involved rather than on a specific condition or pathological diagnosis. Within the framework of a noncategorical approach, children and adolescents with a chronic illness are believed to have problems with adjustment because they are exposed to nonspecific disease factors such as negative life-events and related stressors. Thus, adjustment is posited to be predicted by specific stressors other than by the disease itself.

Given the commonalities in psychosocial functioning across chronic conditions and disabilities, Wallander and colleagues (2003) recommend the examination of specific disease dimensions. These dimensions include psychosocial effects associated with the nature of onset and course of the disease, life threat potential, intrusiveness, or plan of treatment, visibility and social stigma, stability versus crisis, and secondary and functional cognitive disability. Additional dimensions include whether the illness is congenital or acquired, limitations of age appropriate activity and other functional limitations, mobility, physiological functioning, emotional/social impairment, sensory functioning, and communication impairment (Perrin, Newacheck, & Pless, 1993).

In psychology, differential diagnosis may be defined as the process of distinguishing one mental disorder from other disorders that share similar symptoms. In medicine, differential diagnosis may be defined as the process of weighing the probability of one disease versus that of other diseases possibly accounting for a patient's illness. Clearly, there are some commonalities between the definitions used in psychology and medicine; Nonetheless, the process by which the differential diagnosis is made for psychological and medical disorders (e.g., type I diabetes) also entails different procedures. For example, psychological diagnoses are typically based on, among other factors, clinical interviews, thorough history, rating scales and checklists, and symptom criteria from the DSM-IV-TR. In contrast, medical diagnoses, including chronic illnesses, are often based on, among other factors, a clinical interview, thorough history, physical examination, and laboratory tests (e.g., blood count, basic chemistries, and urinalysis).

Differential diagnosis in children and adolescents with a chronic illness may be particularly tricky as many psychiatric diseases are characterized by physical symptoms, and the astute pediatric psychologist needs to be aware of this diagnostic challenge. Frequently, physical symptoms that are determined to be manifestations of a depressive disorder may actually be the result of the medical disease itself (Shemesh et al., 2005). For example, a child receiving treatment for cancer may also appear to be depressed as a result of complaints of lethargy and poor concentration; However, these symptoms are also associat-

Differential diagnosis for children and adolescents with a chronic illness is complex due to the overlap between many medical and psychiatric symptoms

ed with the side effects of chemotherapy. Indeed, given the significant overlap between medical and psychiatric symptoms, some researchers have proposed that the behavioral and emotional problems of chronically ill children should be viewed as variations within the range of “normal” responses to abnormal situations and not as frank psychopathology (see Eiser, 1990). Therefore, accurately determining the incidence and etiology of psychiatric comorbid disorders among children and adolescents with a chronic illness is especially challenging because of the overlap between many medical and psychiatric symptoms.

There are several psychological classifications or syndromes that may resemble the physical symptoms often associated with chronic illness. For example, somatoform disorders present in children and adolescents consist of the persistent experience and complaints of somatic distress that cannot be fully explained by a medical diagnosis. These disorders include somatization disorder, conversion disorder, pain disorder, hypochondriasis, and body dysmorphic disorder. They are often diagnosed when appropriate medical examination reveals no organic basis for the complaint or when symptoms related to an identified organic disorder are much more severe than would typically be expected from an organic disorder (Campo & Fritsch, 1994). Practitioners making a differential diagnosis between somatic disorders and physical disorders need to be especially careful given that the presence of physical symptoms or painful complaints of unknown etiology is a fairly common occurrence in pediatric populations (Campo & Fritsch, 1994; Garralda, 1996). The astute practitioner should always consider the possibility that there is an organic etiology for a child’s physical complaint. Common forms of somatization found in pediatric populations include headaches, recurrent abdominal pains, limb pains, fatigue, dizziness, and chest pain (Egger, Costello, Erkanli, & Angold, 1999). Therapeutic interventions for children with somatoform disorders include education, changes in reinforcement, and development of coping skills (Haugaard, 2004).

An adjustment disorder is a type of mental disorder resulting from maladaptive, or unhealthy responses to stressful or psychologically distressing life events, including the diagnosis of a chronic illness. In order to be classified as an adjustment disorder, the behavioral and emotional symptoms commonly associated with this disorder must be demonstrated to be a response to an identifiable stressor that has occurred within the past three months. The stressor may be acute (e.g., pneumonia) or chronic (e.g., sickle cell disease). Therefore, in the case of children with chronic illness, the diagnosis of adjustment disorder is typically made *after* the diagnosis of the medical condition.

1.6 Comorbidities

Although most children adapt successfully to their chronic condition, the limited literature on psychiatric disorders or adjustment disorders among children and adolescents with chronic illnesses suggests that, in general, children with chronic medical conditions are at heightened risk for secondary behavioral and emotional difficulties relative to their healthy peers (Thompson & Gustafson, 1996). Lavigne and Faier-Routman (1992) conducted a meta-analysis to exam-